

REMARKS

Reconsideration and allowance are respectfully requested in view of the following.

Claims 1-11 and 31-41 remain pending in the application.

Applicants respectfully submit that the amendments to claim 34 neither introduce new matter nor raise new issues after final. As pointed out by the Examiner, the Markush group in claim 34 is defined by monomers from which the claimed blocks are derived. Claim 34 has been amended consistent with the Examiner's observation. The recitation of temperature ranges in claim 34 also does not raise new issues, inasmuch as the ranges have already been presented on the record in independent claim 1. Further, entry of the amendments to claim 34 would simplify or reduce the number of issues remaining for appeal. Accordingly, approval and entry of the attached amendments to claim 34 are respectfully requested.

Double Patenting Rejection

Claims 1-11 have been provisionally requested under the judicially created doctrine of obviousness-type double patenting over claims 1-13 of copending application 09/436,360.

This rejection is traversed.

The claims of the '360 application are silent with respect to the claimed "difunctional oligomer."

In the final Office Action, the Examiner asserts that "the term, 'difunctional oligomer,' is fully encompassed by the difunctional compound of the copending application." Applicants disagree. An oligomer is a molecule containing a plurality of monomer units. The claims of co-pending application 09/436,360 do not expressly recite or suggest such an oligomer.

For these reasons, withdrawal of this rejection is in order.

Claim Rejections -- 35 U.S.C. § 112, first paragraph

Claims 34-41 have been rejected under 35 U.S.C. § 112, first paragraph.

Applicants traverse this rejection, on the ground that it is misplaced. However, in order to expedite prosecution, claim 34 has been amended to address the Examiner's specific concerns. Withdrawal of this rejection is in order.

Claim Rejections -- 35 U.S.C. § 112, first paragraph

Claims 34-41 have been rejected under 35 U.S.C. § 112, second paragraph, on the ground that glycidyl azide polymer and poly(glycidyl nitrate) are specified as monomers, not blocks.

Claim 34 has been amended to claim glycidyl azide polymer and poly(glycidyl nitrate) in terms of the monomers from which they are derived. Thus, withdrawal of this rejection is in order.

Claims 1-11 have been rejected under 35 U.S.C. § 112, second paragraph, on the ground that the phrases “below about 75°C,” “above about -20°C,” and “below about 60°C” render the claims indefinite. This rejection is traversed.

As indicated in MPEP § 2173.05(b), the use of relative terminology such as the term “about” in claim language has long been accepted as permissible. *See, e.g., W.L. Gore & Assocs., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 U.S.P.Q. 303, (Fed Cir. 1983), *cert. denied*, 469 U.S. 851 (1984) (a limitation defining the stretch rate of a plastic as “exceeding about 10% per second” held definite); *See also Grain Processing Corp. v. American Maize Prods. Co.*, 51 U.S.P.Q.2d 1556, 1559 n.2 (Fed Cir. 1999) (addressing infringement of “descriptive ratio greater than about 2”); *Hybritech, Inc. v. Abbott Labs.*, 7 U.S.P.Q.2d 1191, 1199 (Fed. Cir. 1988).

Thus, the recitation of the term "about" in combination with "above" and "below" -- *i.e.*, "above about" or "below about" -- does not render the claims indefinite.

Claims 1-11 have been rejected under 35 U.S.C. § 112, second paragraph, as indefinite on the following grounds:

It is unclear if the A block containing segment and the B block containing segment are mutually exclusive, since both segments may be crystalline below -20°C and amorphous above 60°C. Under the aforementioned conditions, the requirements of both segments would be met by a single constituent.

This rejection is traversed.

It is an axiom of patent law that a claim must be interpreted as it would be by one of ordinary skill in the art. Such skilled artisans understand that blocks of the type described in the application have a transition point below which the blocks are crystalline and above which the blocks are amorphous.

The Examiner states that "both segments may be crystalline below [about] -20°C and amorphous above [about] 60°C." This is true. However, if the A block is crystalline at about 60°C, it will remain crystalline if cooled below about 60°C. Likewise, if the B block is amorphous at about -20°C, it will remain amorphous above about -20°C. Thus, the A and B blocks are in

different states between about -20°C and 60°C and, therefore, are mutually exclusive.

The *clear and ordinary meaning* of the claim language the “A block being crystalline below about 60°C,” as understood by a person of ordinary skill, would have been construed to mean that the A block is crystalline at all temperatures below about 60°C. To construe claim 1 in any other way, such as the Examiner has done here, would render the claim language “below about 60°C” *meaningless*. The Examiner contorts the claim language to read on a block that is crystalline at *any* temperature below 60°C, even if that block is not crystalline at all temperature below about 60°C. (Thus, the Examiner’s interpretation of claim 1 would read on, for example, a block that is amorphous above about 2°C but crystalline below about 2°C.) However, all blocks otherwise meeting the requirements of claim 1 will inherently be crystalline if cooled to low enough of a temperature. The Examiner’s contorted interpretation of the claim language has no meaningful limiting effect whatsoever on the scope of the claims, and, therefore, would not have been considered the normal and ordinary meaning of the claims by a person of ordinary skill in the art.

Similarly, the *clear and ordinary meaning* of the claim language the “B block being amorphous above about -20°C,” as understood by a person of

ordinary skill, would have been construed to mean that the B block is amorphous at all temperatures above about -20°C. To construe claim 1 in any other way, such as the Examiner has done here, would render the claim language "above about -20°C" *meaningless*. The Examiner contorts the claim language to read on a block that is amorphous at *any* temperature above -20°C, even if that block is not amorphous at all temperature above about -20°C. (Thus, the Examiner's interpretation of claim 1 would read on, for example, a block that is amorphous above about 40°C but crystalline below about 40°C.) However, all blocks otherwise meeting the requirements of claim 1 will inherently be amorphous if heated to high enough of a temperature. The Examiner's contorted interpretation of the claim language has no meaningful limiting effect whatsoever on the scope of the claims, and, therefore, would not have been considered the normal and ordinary meaning of the claims by a person of ordinary skill in the art.

It is respectfully submitted that all claims are in full compliance with 35 U.S.C. § 112, and that the Section 112, first and second paragraph rejections should be withdrawn.

Claims 1-11 have been rejected under 35 U.S.C. § 103(a) as obvious over U.S. Patent No. 4,806,613 to Wardle in view of Oertel, *Polyurethane*

Handbook: Chemistry - Raw Materials - Processing - Applications - Properties.

Applicants respectfully traverse the Section 103(a) rejection.

Teachings of references can be combined only if there is some suggestion or motivation to do so. *Smithkline Diagnostics, Inc. v. Helena Lab. Corp.*, 859 F.2d 878, 886-87 (Fed. Cir. 1988). Here, the Wardle '613 patent relates to thermoplastic elastomers, but is silent regarding the use of an oligomer as the linking compound. In contrast, Oertel relates to hardened products. Presumably, these hardened products are crosslinked thermosets. A person having ordinary skill in the art who, at the time the invention was made, was attempting to make a thermoplastic elastomer such as disclosed in Wardle '613 would not rely on a cross-linking mechanism, such as the one taught in Oertel, used in making a hardened product. Such a combination would be contrary to the goal of forming a thermoplastic elastomer.

For this reason alone, a *prima facie* case of obviousness has not been established, and the Section 103(a) rejection should be withdrawn.

Additionally, Oertel teaches making high molecular weight polyurethane-polyols from a two-component system. The first component is a **high molecular weight polyurethane**. The second component is an

adduct of a polyisocyanate to a triol. This two-component system is fundamentally different from the claimed invention for the following reasons.

First, in the claimed invention, the polymer blocks are derived from oxetane, oxirane, and/or THF blocks. Oertel does not teach the use of these blocks. Given this fundamental difference, there would not have been the requisite motivation for one of ordinary skill in the art to have used Oertel to make the claimed invention.

Second, in the claimed invention, the linking oligomer has two isocyanate-reactive moieties, and is preferably a urethane. On the other hand, Oertel uses as its second (crosslinking) component an “adduct of a polyisocyanate and a triol.” The triol second component is a crosslinker that will cause the composition to cure into a thermoset, not a thermoplastic elastomer. In contrast, the crosslinker of the claimed invention is a di-functional oligomer.

Third, Oertel teaches that its polyurethane diols are the main polymer blocks. These diols are high molecular weight polyurethane diols, which do not qualify as “linking groups” as that term is used in the art.

For all of these reasons, the Section 103(a) rejection is misplaced, and withdrawal of the same is respectfully requested.

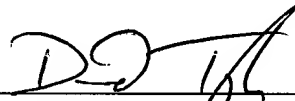
The claims, as presented herein, are submitted to be in condition for allowance and an early Notice to that effect is requested.

If, after reviewing the above, the Examiner believes any issues remain unresolved, the favor of an Examiner interview is requested and the Examiner is requested to contact the undersigned, by telephone, to schedule same.

In the absence of allowance, entry of the claim amendments is respectfully requested in order to place the application in better condition for appeal.

Respectfully submitted,

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IN THE CLAIMS (MARKED-UP VERSION):

Kindly amend claim 34 as follows:

34. (Once amended) A thermoplastic elastomer having A blocks and B blocks and being present in a solid state suitable for use as a binder for at least one of a propellant, explosive, and gasifier, the thermoplastic elastomer being formulated from a composition comprising, as constituents:

A blocks terminated with isocyanate-reactive groups derived from monomers comprising at least one member selected from the group consisting of 3,3-bis(ethoxymethyl)oxetane, 3,3-bis(chloromethyl)oxetane, 3,3-bis(methoxymethyl)oxetane, 3,3-bis(fluoromethyl)oxetane), 3,3-bis(acetoxymethyl)oxetane, 3,3-bis(hydroxymethyl)oxetane, 3,3-bis(methoxyethoxymethyl)oxetane, 3,3-bis(iodomethyl)oxetane, 3,3-bis(nitratomethyl)oxetane), 3,3-bis(methylnitraminomethyl)oxetane, and 3,3-bis(azidomethyl)oxetane), the A blocks being crystalline below about 60°C;

B blocks terminated with isocyanate-reactive groups derived from monomers comprising at least one member selected from the group consisting of 3-hydroxymethyl-3-methyloxetane, 3-octoxymethyl-3-methyloxetane, 3-chloromethyl-3-methyloxetane, 3-azidomethyl-3-methyloxetane, 3-iodomethyl-3-methyloxetane, 3-propynomethylmethyloxetane, 3-nitratomethyl-3-methyloxetane, 3-methylnitraminomethyl-3-methyloxetane,

tetrahydrofuran, glycidyl azide [polymer], and [poly(glycidyl nitrate)]

glycidyl nitrate, the B blocks being amorphous above about -20°C; and

linking groups derived from at least one diisocyanate for end-capping the A blocks and the B blocks and at least one difunctional oligomer comprising two functional groups which are reactive with isocyanate moieties of the diisocyanate.